

ABSTRACT

Cattle farming can also be referred to as one type of livestock business that is often found to emit waste products in the form of an unpleasant odor, one of which comes from the cow dung. The emergence of this odor causes a lot of harm to humans and even to the cows themselves, the performance and productivity of the cows will also decrease. Methane (CH₄) is part of one of the greenhouse gas effects, where greenhouse gases are gases that can cause an increase in earth's temperature. The environment and production of dairy cows in the highlands requires an environment temperature ranging from 17°C to 21°C. Therefore, automation and temperature control tools are needed in dairy cow pens. This study uses three sensors, namely DHT 22, MQ – 135, and MQ – 4 which are connected to the ESP32 microcontroller. The display for displaying data results is on a 16x2 LCD and several devices such as smartphones and laptops whose data results are displayed via the MQTT Dashboard platform. In addition, this study also calculates the Quality of Service in order to find out how good the quality of the network is. The analysis of this study is regarding the accuracy of DHT22 sensor readings, the concentration of ammonia gas levels using the MQ – 135 sensor and methane gas levels using the MQ – 4 sensor. when the gas level is normal, the final result is 2.1 ppm and when exposed to gas, it is 32.7 ppm. Then for testing the MQ – 4 sensor at normal gas levels the final result is 8.03ppm and when exposed to gas levels of 4824.7. Next are the results of the QoS delay test which gets an average of 240.118 ms, and a throughput of 4.671 kbps.

Keywords : Accuracy, DHT22, Gas Level, MQ Sensor, Temperature.